

Lead institution: University of São Paulo Work Address of the position: Av Professor Mello Moraes, 2231	
Supervisor name: José Roberto Simões Moreira	Department: Mechanic Engineering
APPLY AT: www.rcgi.poli.usp.br/opportunities https://goo.gl/p4ifHx <u>REF 17PDR008</u>	Type: POS-DOC (40 hours weekly) Duration: 2 years APPLICATION DEADLINE: JULY, 31
Project title: (Portuguese and English) Hybrid Solar-Gas System for Natural Gas-Steam Reforming Pos doctoral fellowship <u>REF 17PDR008</u>	
Research theme area: (Portuguese and English) Thermal Engineering	
Abstract (Portuguese and English) This position is expected to be developed in collaboration with researchers from the Physical Chemistry Programme of USP's Research Centre for Gas Innovation – RCGI (summary of the program and projects is found in the RCGI website at www.usp.br/rcgi). To carry out numerical studies on syngas production using solar energy in black body cavities	
Description A HYBRID SOLAR-GAS SYSTEM FOR NATURAL GAS STEAM REFORMING This project deals with developing a novel system for natural gas reforming using solar energy as the main energy source. The sun can provide radiation that, once concentrated, can reach high temperatures. Such high temperatures are necessary to trigger some important thermochemical reactions, such as the one to produce syngas, or even hydrogen gas alone. The solar reactor may operate alone or in a hybrid configuration supplying considerable part of the necessary thermal energy for triggering and keeping the chemical reaction. The main goals of this project are: (i) to carry out an up-to-date study on steam reforming processes for natural gas; (ii) to build a solar simulator for laboratory studies of low power in the 10 kW to 20 kW range; (iii) to design and build a black body cavity coupled with a thermo reactor to carry out the steam reforming in natural gas; (iv) to carry out experimental and numerical work of solar simulator and the thermochemical reactions.	

Requirements to fill the position.

The position aims to work with research and development related to

1. To carry out an up-to-date study on solar simulators, solar concentration techniques;
2. Study alternative black body cavity conceptions for the study;
3. To study numerically the black cavity configuration from step 2 coupled with a thermal reactor where would be possible to carry out the steam reforming process in natural gas;
4. To compare numerical data with experimental data.

Information about the FELLOWSHIP

The selected candidate will receive a FAPESP Post-Doctoral fellowship in the amount of R\$ 6.819,30 monthly payed in Reais and a research contingency fund, equivalent to 15% of the annual value of the fellowship which should be spent on items directly related to the research activity, as well as displacement funding, if necessary and applicable. More information about the fellowship is at: fapesp.br/en/postdoc.